

# PATENT SPECIFICATION

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## (54) A HEAD-REST FOR MOTOR VEHICLES

(71) We, FORD MOTOR COMPANY LIMITED, of Eagle Way, Brentwood, Essex CM13 3BW, a British Company, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to a motor vehicle seat provided with a head-rest adapted in the event of sharp deceleration of the vehicle to pivot forward and to move backward with an energy dissipating motion when the head of an occupant jerks backward and strikes the head-rest.

According to the invention there is provided a motor vehicle seat provided with a head-rest adapted in the event of a sharp deceleration of the vehicle to pivot forward and to move backward with an energy dissipating motion when the head of an occupant of the vehicle jerks backward and strikes the head-rest including a head-rest member, a support member supporting said head-rest member, said support member being pivoted to the motor vehicle seat by a first means and being secured to the motor vehicle seat by a second means, the second means being adapted to release the support member in the event of a sharp deceleration of the vehicle whereby said support member due to its inertia pivots in the forward direction and means to lock said support member in a forward position.

Preferably the second means is a rivet which is triggered to release the support member in response to a signal from an impact sensor. The impact sensor can be fixed to the vehicle body at any suitable position.

Preferably the impact of the head of a vehicle occupant is cushioned in energy-dissipating fashion, by plastic deformation of the head-rest member and the support member.

Preferably the impact of the head of a

vehicle occupant is also cushioned in energy-dissipating fashion by the plastic deformation of a torsion bar.

The triggering of the rivet can be timed by means of the impact sensor to occur at such an instant that in the event of collision when the head-rest member pivots forward, it does not strike the head of the occupant and when the occupants head jerks backward, the head rest is already locked in the forward position.

Preferably the torsion bar which cushions the impact of a vehicle occupant's head in energy-dissipating fashion, simultaneously forms the pivot for the head-rest.

The invention will now be described by way of example with reference to the accompanying drawings in which Figure 1 illustrates a front elevation of the top part of a motor vehicle seat back with a head-rest embodying the invention; Figure 2 illustrates a side elevation of the head-rest supported on the back of the seat; and Figure 3 illustrates a side elevation of the head-rest when pivoted in the forward position.

In Figure 1, the head-rest 1 is attached to a support member 2. The support member is provided at its bottom end with a pair of lugs 3 and 4. The lugs 3 and 4 are pivoted to a mounting 7 secured to the seat-back 6 by means of a bottom leg 8 of a U-shaped torsion bar 5. The top leg 9 of the torsion bar 5 rests substantially without any load, against the support member 2. A displaceable bolt member 12, formed with a vertically extending slot and a detent 14 is secured to the lugs by a bolt passing through said slot. The member 12 is held in a downward position against the force of a spring 13 by the top leg 9 of the torsion bar 5. The support member 2 is also secured to the seat back by a rivet 10 which can be triggered by an impact sensor to release the support member. The impact sensor can be fixed to the vehicle body at

any suitable position.

In the event of a collision, the explosive rivet 10 is triggered by a signal from the impact sensor and releases the head-rest 1, which due to its inertia, pivots forward until a stop 11 on the bottom end of the support member 2, limits this motion. At the same time, the displaceable bolt member 12 hitherto held in a downward position by the top leg 9 of the torsion bar 5 against the force of a spring 13, is released and is displaced upward between the support member 2 and the upper leg 9 of the torsion bar 5. The member 12 in its upward position is locked by the upper leg 9 of the bar 5 engaging the detent 14 of the member 12 and when the head of a vehicle occupant jerks backward and strikes the head-rest, the torsion bar 5 is immediately plastically deformed in energy-dissipating fashion. Furthermore, the bolt component 12, through the detent arrangement 14 into which the upper leg 9 of the torsion bar 5 engages, prevents further forward pivoting of the head-rest and consequent impact of the latter against the head of the vehicle occupant in the event of a collision involving successive impact. As already mentioned, the triggering of the rivet 10 can be timed by means of the impact sensor, to occur at such an instant that when the head-rest member pivots forward, it does not strike the head of the vehicle occupant, and at the commencement of the return motion of the occupant's head the head-rest member is already locked in its forward position.

#### WHAT WE CLAIM IS:—

1. A motor vehicle seat provided with a head-rest adapted in the event of a sharp deceleration of the vehicle to pivot forward and to move backward with an energy dissipating motion when the head of an occupant of the vehicle jerks backward and strikes the head-rest including a head-rest member, a support member supporting said head-rest member, said support member being pivoted to the motor vehicle seat by a first means and being secured to the motor vehicle seat by a second means, the second means being adapted to release the sup-

port member in the event of a sharp deceleration of the vehicle whereby said support member due to its inertia pivots in the forward direction and means to lock said support member in a forward position.

2. A motor vehicle seat as claimed in claim 1, wherein said second means is a rivet which can be triggered to release the support member in response to a signal received from an impact sensor.

3. A motor vehicle seat as claimed in claim 1 or 2, including a U-shaped torsion bar having a lower leg to pivot lugs of said support member to the seat and an upper leg resting against said support member.

4. A motor vehicle seat as claimed in claim 3, wherein said lock means includes a spring loaded displaceable member moveably secured to said lugs and held in a downward position by the upper leg of said torsion bar, said displaceable member having a detent adapted to engage the upper leg of said torsion bar, the arrangement being such that in the event of sharp deceleration of the vehicle, the support member after being released from the seat pivots forward due to its inertia, the displaceable member moves upward and the upper leg of the torsion bar engages the detent in said member whereby the support member is locked in its forward position.

5. A motor vehicle seat as claimed in claim 3 or 4, wherein in the event of collision, when the head of an occupant of the vehicle jerks backwards and strikes the head-rest member, said torsion bar is plastically deformed.

6. A motor vehicle seat as claimed in any one of the preceding claims, wherein in the event of collision, when the head of an occupant of the vehicle jerks backwards and strikes the head-rest member, said support member and said head-rest member are plastically deformed.

7. A motor vehicle seat provided with a head rest substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

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2 SHEETS

COMPLETE SPECIFICATION

*This drawing is a reproduction of  
the Original on a reduced scale.*

SHEET 1

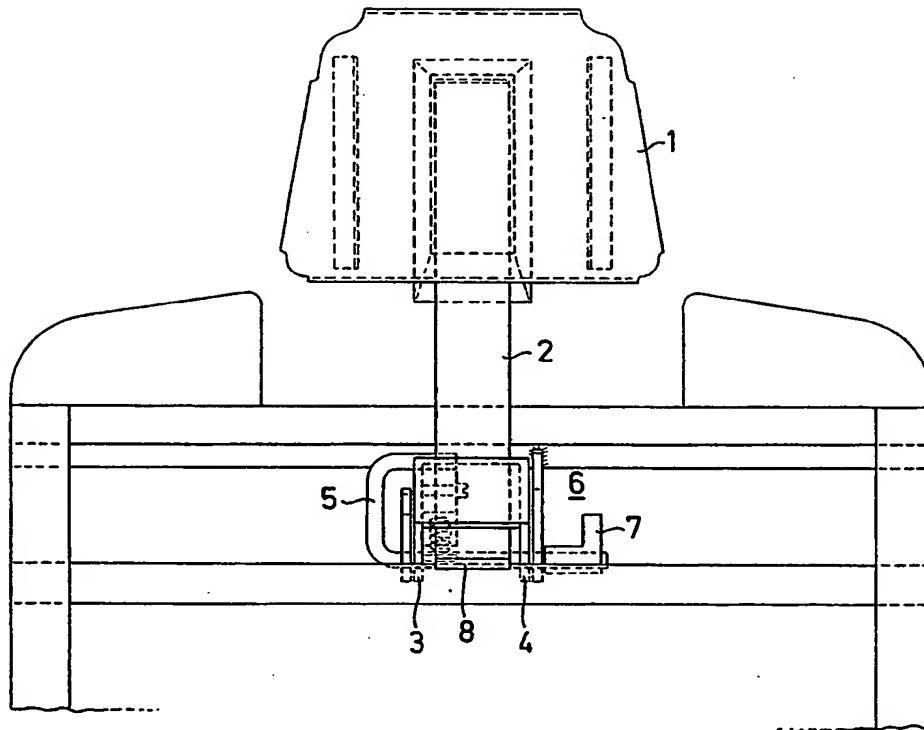


FIG. 1

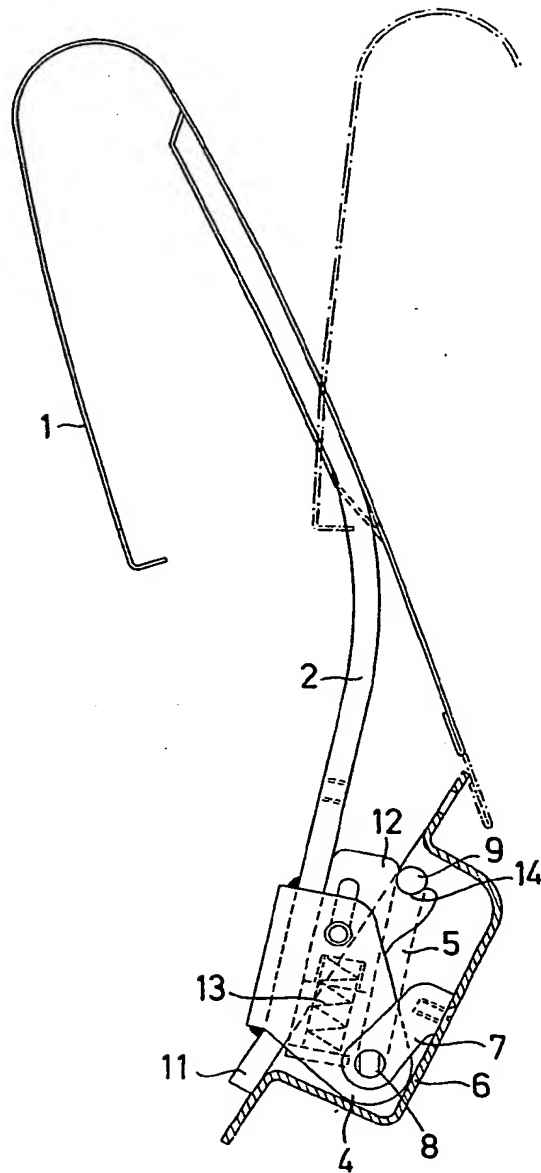


FIG. 3

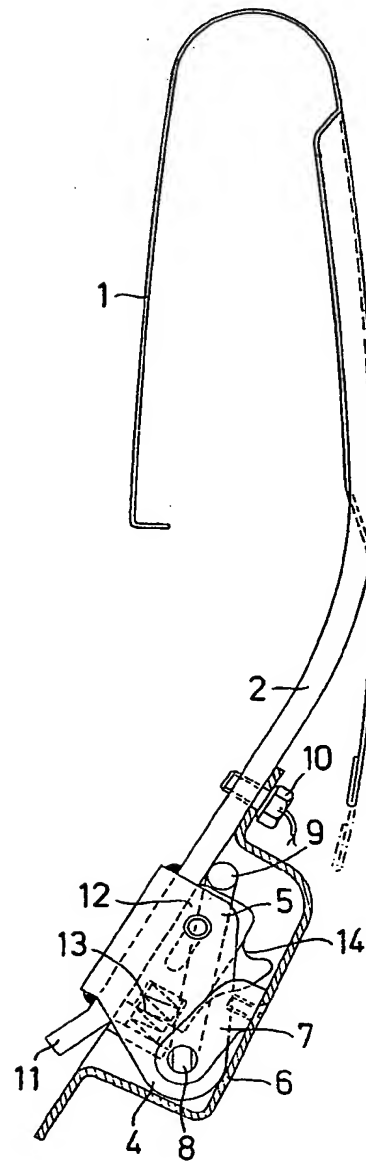


FIG. 2